LEARNING WITH E'S: PUTTING TECHNOLOGY IN ITS PLACE

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ABSTRACT The topic of e-learning is the focus of much current interest within education and industry. to decrease the use of computers within education made by Cordes and. Miller (2000), for example, we need to avoid the temptation to pay too much attention to the technology and too little attention to the learners, teachers and their context. The future design challenge we face is the development of interactive educational content that enables learners to bridge the gap between the operational and conceptual levels of their interactive experience and engage with the concepts of the discipline being studied. The technology challenge is building a platform for the delivery of this content through existing and emerging technology and in multiple contexts. The theoretical challenge and potential pedagogical benefits lay in the development of a central pedagogical framework. In order to address these challenges we need to reflect on our progress to date, to assess the evidence for the effectiveness of e-learning and to identify what works and why.

KEYWORDS e-learning, socio-cultural psychology, systematic review, post-16 education sector

1. INTRODUCTION

A plethora of different artifacts and a constantly changing list of words for the latest trends in learning technology have emerged in the last decade or so. Digital technology is all around us, from fluffy parrots to mobile devices and flat screen TVs. But how can we tread through this digital landscape to inspire the young as well as meeting the training needs of busy professionals? Whether we are focusing upon e-Learning, m-Learning or designing a distance learning experience we need to ensure that the experience we offer our learners is integrated by something more certain than the latest gadgets and functionalities. Whatever the media and whatever the words used to describe the experience all of these efforts are about helping people learn about a particular topic using digital technology. There are of course differences between the type of learning experience that will work when this technology is a mobile phone and that which will work when the technology is a large screen television, for example. However at some level of abstraction there is a pedagogical framework about how people learn that is common to all these devices. Without question, that framework must put human learners and teachers at the centre of the design process. In order for learning technology to reap the potential rewards it promises much effort needs to be devoted to the specification of such a framework with the identification of how the framework needs to be adapted and varied to meet the needs of different devices and contexts. There has of course been much excellent work done on the development of underpinning pedagogies for various systems that have been developed. However, this work is scattered across a multiplicity of different disciplines. We now need to pull this work together into a coherent whole and make it accessible to policy makers, system builders and educators alike. We need to ensure that the dialogue between developers in business and researchers in academia is effective if we are to offer learners the quality of educational experience they deserve.

2. THE NEED FOR LEARNER CENTRED PEDAGOGY

The success of the use of any technology as an educational tool depends upon the extent to which it is integrated into a pedagogically grounded framework. The technology is merely a medium through which the learner can communicate with others. Those others may be the writers of course modules that the learner is reading on a screen, they may be fellow students with whom a discussion is being conducted through an on-line forum, or they might be a teacher who is offering some advice. Whatever the situation, the technology itself should not be the focus. There is a tendency to add a fresh letter to the start of the word 'learn' or 'learning' and to then assume that a new paradigm has been created. The words 'e-learning' and 'm-learning' are examples of this phenomenon. The fundamental feature is still, of course, the learning and that should always be the focus of any educational experience. If we wish to offer learners a particular technology such as a toy, a mobile PDA or a desktop PC in order to increase their access to the learning experience, the focus of attention should remain upon the concepts to be taught and learnt, not on the technology. We may have to make some changes to the packaging, to the size of the modules for example, but the concepts we want the learner to understand should remain our primary concern. One way to progress this endeavour is to address two key questions:

1. What kind of underpinning pedagogy can show us how we can use the most suitable resources to produce a motivating and coherent learning experience across multiple devices and contexts?

Constructivism has been influential within mainstream education and the design of educational technology alike. One brand of constructivism that is particularly appropriate to our current pursuit is the socio-cultural approach (Vygotsky, 1986), which relies upon social interaction, internalisation, the inseparability of teaching and learning, and targeting the to-be-learnt to each individual learners' point of learning readiness. We must therefore provide opportunities and support for individuals and groups of all ages to act as both learners and teachers. In the past we have also discussed the relationship that exists between the processes of Narrative Guidance and Narrative Construction and have suggested that developers of interactive multimedia learning resources need to confront this relationship and provide tools to ensure learners can create their own story from the resources and in this way construct meaning (Plowman, Luckin, Laurillard, Stratfold, & Taylor, 1999). The beauty of interactivity can be seen as offering learners a host of opportunities: pauses or gaps in the narrative (for example) for which they need to create personal bridges. The quality and contingency of these pauses and gaps is however a key design imperative; a design imperative that must be translated from current book, TV and film production traditions into the new tradition of interactive educational convergent media experiences. We need to create a sense of collusion between authors, teachers and learners so that they are both active participants in the creation of an educationally effective narrative construction experience.

2. What are the resources for learning that are at our disposal?

The glib answer to this question is "everything", however we can initially differentiate between people and artifacts. Central to the creation of an effective design framework is the need for us to recognise the specific aptitudes of digital technology and of human beings so that we use all our resources to best effect. Digital technology is excellent at storing, manipulating and displaying multiple media formats. Large memory capacity and fast processors permit detailed computation and the dynamic updating of descriptions of all learning resources both human and media. People are good at helping each other learn, at socialising and adapting sensitively to small nuances: changes in facial expression or behaviour. They are very flexible and can empathise in a way that machines never will. They are also capable of learning how to help themselves. Machines however allow us as humans to become connected and information about us to be distributed across the contexts in which we live and work. They also promote the reuse of media resources such as texts and videos that can be described using metadata, stored in a database and searched for by systems or people looking for particular sorts of content material. We need to keep technology in its place and use it for what it is good for.

In summary therefore, the future design challenge we face is the development of interactive educational content that enables learners to bridge the gap between the operational and conceptual levels of the interactive experience and engage with the concepts of the discipline being studied. The technology challenge is building a platform for the delivery of this content through existing and emerging technology and in multiple contexts. The theoretical challenge and potential pedagogical benefits lay in the development of a central pedagogical framework.

3. SEARCHING FOR ANSWERS IN THE POST-16 SECTOR

The preceding discussion has highlighted both the potential educational benefits offered by interactive digital media and the challenges it poses. Before we move too quickly ahead, we need to take stock and reflect upon what has worked in the past and ensure that we identify evidence for the effectiveness of e-learning. The discussion so far has encompassed all situations in which technology is being used to engender learning. This is a huge area and in order to make headway with this pursuit we need to focus on a smaller subsection. We now describe the way in which we are looking to others who have evaluated the use of digital educational technology in the post-16 sector and asking what worked and why. In this way we can start to explore the two questions identified in section 2 above: The nature of the underpinning pedagogy and the identification of resources.

Our methodology will be that of a modified systematic review. The question that will drive this review is: *How compelling is the evidence for the effectiveness of e-learning in the post-16 sector?* We hope that this methodology will ensure that we collect the most pertinent work from across a wide range of disciplines without being parochial with respect to our own discipline and area of expertise. Through consultation with a panel of experts, both through face to face seminars and on-line discussion we will identify key search terms, sources and criteria that can be used in our initial search for evidence. As we gather data the same group of experts will be asked to comment and advice on a regular basis. In this way our systematic review will be iteratively validated by a range of expertise to ensure both breadth and rigor. Our initial work is seeking to define the three concepts at the heart of this review through exploration of the following questions:

3.1 What is The Nature of Post 16 Learning?

Learning in instructional contexts is of interest to teachers, psychologists and researchers in education as well as to people who are interested in training, but is learning in the post-16 sector different to the learning that occurs in compulsory education? Laurillard (2002) suggests that a conversational framework model is needed in Higher Education. This entails a discursive, adaptive, interactive, and reflective approach by both the teacher and the learner. At the heart of Laurillard's model of learning is the notion that there needs to be an iterative dialogue between the teacher and the learner 'nurturing the ideas and skills that constitute understanding' (Laurillard, 2002). It necessitates recognition of the difference between interaction at an operational level of understanding and interaction at a conceptual level of understanding. Educators need to ensure that what happens at both levels is interlinked and that the interactions learners engage in at the operational level do not distract from the desired conceptual interactivity. This is particularly pertinent when we consider e-learning where the desire to use the power of technology to engage can lead to gratuitous operational complexity, leaving learners concentrating on the mechanics of the interface rather than the content to be learnt. Narrative, according to Laurillard, is a fundamental part of the learning process that allows for knowledge to grow and be negotiated over time. However there needs to be some flexibility in the system in order for adaptation, interaction and reflection to take place. We are currently asking a range of e-learning experts drawn from academia, industry and government a range of questions including: Are there differences between the pre and post 16 sectors in terms of how people learn? Are questions about the nature, growth, and self regulation of knowledge and the provision of more effective instruction also relevant to the post 16 sector?

3.2 What is the nature of e-learning?

Following on from our discussion of learning we now move on to the question of what is e-learning. E-learning has a plethora of definitions. The challenge is to combine, integrate and elaborate the definitions so that a satisfactory conception of what is meant by e-learning in the post 16 sector is achieved. Some example definitions will illustrate the issues here: The UK Department for Education and Skills consultation document 'Towards a Unified e-learning Strategy' presents us with a broad definition "*If someone is learning in a way that uses information and communications technologies (ICTs), they are using e-learning (DfES, 2003)"* Whereas , the UK Department for Health (2003) cite Rosenburg's (2001) definition and specify e-learning as being on-line learning: "e-learning refers to the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance". In contrast again, the Australian National

Training Authority (ANTA) proposes that: "e-learning is a broader concept [than online learning], encompassing a wide set of applications and processes which use all available electronic media to deliver vocational education and training more flexibly…the general intent to support a broad range of electronic media (internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV and CD-ROM) to make vocational learning more flexible for clients."

3.3 What counts as evidence for effectiveness?

Finally we need to consider what might count as the evidence for or against the effectiveness of e-learning. Evidence about how well e-learning is performing may be found in a whole host of different journals, websites, conference papers and presentations emanating from a wide range of disciplines. For each of these disciplines the nature of the evidence that will be seen as valid, and the data collection and analytical methodologies that will have been used to assess this evidence will likewise vary. There will be evidence of very different kinds and qualities ranging from large scale multi-institution studies looking at both process and outcomes, to well-conducted but small-scale laboratory experiments, to more impressionistic studies of individual class or college interventions. Gathering and then weighing this evidence are both not inconsiderable tasks. Specifying the nature of what will count as evidence for or against the effectiveness of e-learning in the post 16 sector is the third area that we are currently exploring with our panel of experts.

4. CONCLUDING REMARKS

In this paper we have identified key questions that need to be addressed by those involved in the development of e-learning. We have suggested that a learner centred approach that specifies an underpinning pedagogical framework is required and that technology should be used in a manner that recognizes both its weaknesses and its strengths. We have also proposed that in order to ensure that this approach is informed by past experience we need to pull together the growing body of evidence from the work conducted across a diverse range of disciplines and contexts from commerce to academia. We have described the way in which we are completing this type of review in the post-16 educational sector and look forward to reporting the results of our expert consultation at the e-society conference in July.

REFERENCES

Australian National Training Authority (2003) Australian Flexible Learning Framework Supporting Flexible Learning Opportunities Definition of key terms used in e-learning. Accessed May 2004 http://www.flexiblelearning.net.au/guides/keyterms.pdf

Cordes, C. and E. Miller, eds. Fool's Gold: A Critical Look at Computers in Childhood. 2000, U.S. Alliance for childhood

Department for Education and Skills (2003) 'Towards a unified e-learning strategy' Available at http://www.dfes.gov.uk/consultations

Department of Health (2003) Building E-Learning Capacity for the Social work Degree A Scoping Study for the Department of Health E-Learning Steering Group Available at http://www.doh.gov.uk/swqualification

Laurillard, D. (2002) Rethinking University Teaching: A Conversational Framework for the Effective Use of Learning Technologies London Routledge Falmer

Plowman, L., Luckin, R., Laurillard, D., Stratfold, M., & Taylor, J. (1999). Designing Multimedia for Learning: Narrative Guidance and Narrative Construction, in the proceedings of CHI 99 (pp. 310-317) Pittsburgh, USA:ACM.

Rosenberg, M. (2001) e-learning New York McGraw-Hill

Vygotsky, L. S. (1986). Thought and Language. Cambridge, Mass: The MIT